REMARKS

Claims 1-4, 6-10, 12-13, 15-26, 28, and 30-32 are pending in the Application. Claims 19, 31, and 32 have been amended. Claims 33-34 have been added. Support for the amendments may be found in the Specification as filed at least on page 8, lines 3-22, page 9, line 19, and page 10, Table 1. No new matter has been added. The rejections of the claims are respectfully traversed in light of the amendments and following remarks in conjunction with the Response to Final Office Action dated May 12, 2004 (hereinafter the "Response to Final Office Action"), and reconsideration is requested.

Response to Advisory Action

The Examiner writes in part that the "Declaration fail[s] to address the negative value (-0.05) which has been raised."

Applicant refers the Examiner to paragraphs 7-10 of the Declaration of Dr. Larry Chen (hereinafter the "Chen Declaration") filed with the Response to Final Office Action, in particular paragraphs 7 and 10, which state:

> 7. The Applicant disclosed an etch-to-deposition (E/D) ratio defined by the equation: E/D = (UBUC-BUC) / UBUC, where UBUC is the deposition rate of the process with no wafer bias or clamping (unbiased, unclamped), and BUC is the deposition rate of the process with wafer and no clamping (biased, unclamped). (Applicant's Specification, page 8, lines 6-13).
>
> 10. In my opinion, when the deposition rate of the process is measured with no wafer bias or clamping (UBUC) and no gas flow change (e.g., no increased O_2 levels), the UBUC-deposited film refractive index changes as compared to the BUC-deposited film refractive index. The deposition rate of UBUC is larger than the deposition rate of BUC for the same film having the same refractive index but is NOT always larger for different films having different refractive indices. In other words, the films being deposited in the two cases are of different composition (more or less silicon-richness). Accordingly, under some conditions for low deposition rates and high aspect ratio gaps, the deposition rate with bias (BUC) may be larger than the deposition rate without bias (UBUC) and therefore the E/D ratio, as defined by the Applicant, may be negative in some cases.

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Applicant again submits that the deposition rate with bias (BUC) may be larger than the deposition rate without bias (UBUC) in some regimes, as evidence by the Chen

Declaration. The difference in the subtraction of deposition rates may be negative in some regimes.

The Examiner further writes in part that "Applicant[ ] fail[s] to point out which portion of the dielectric layer (525) in Fig. 5C of Papasouliotis '881 has a cusp."

Applicant submits that Fig. 5C of the Papasouliotis reference only shows a step in deposition/etch cycling. "The deposition/etching cycle is repeated as many times as necessary until the resulting gap can be filled by a conventional HDP deposition step (FIG. 5A) without void formation, as shown in FIG. 5C." (Papasouliotis, col.6, ll.9-12).

Thus, Applicant refers the Examiner to FIG. 5A which clearly shows that cusps 530 are formed during the filling of gap 510 initially formed between circuit elements 520. "Cusps 530 begin to form at the corners of circuit elements 520 as SiO_2 layer 525 fills gap 510, as shown in FIG. 5A." (Papasouliotis, col.5, ll.59-61).

Accordingly, Papasouliotis does not disclose or suggest all the limitations of Claims 1, 19, and 30, and added Claim 34, which recite the filling of a gap "without cusp formation", a new and nonobvious regime for the ratio of the oxygen-containing component to the silicon-containing component in the gas mixture, and/or a new and nonobvious regime for the etch-to-deposition ratio.

Furthermore, Applicant submits that the pending claims including new claims are patentable over the references of record for at least the same or similar reasons provided in the Response to Final Office Action.

Request for Telephonic Interview

In light of the lengthy prosecution history to date in the present application, Applicant requests a telephonic interview with the Examiner prior to the next Office Action, but if not agreeable, soon after the Examiner's submission of the next Office Action. Applicant's attorney David Park, and declarant Dr. Larry Chen, will be available for the interview to discuss the present application, in particular the etch-to-deposition ratio and the Papasouliotis reference.

Please call Mr. Park at (949) 752-7040 at your earliest convenience to schedule the interview.

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CONCLUSION

For the above reasons, pending Claims 1-4, 6-10, 12-13, 15-26, 28, and 30-34 are believed to be in condition for allowance and allowance of the Application is hereby solicited. If the Examiner should have any questions or concerns, the Examiner is hereby requested to telephone Applicant's Attorney at (949) 752-7040.

Certificate of Facsimile Transmission

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on the date shown below.

David S. Park — June 14, 2004
David S. Park — Date of Signature

Respectfully submitted,

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